A Genius Among Us

Math professor Tom Zhang named 2014 MacArthur Fellow

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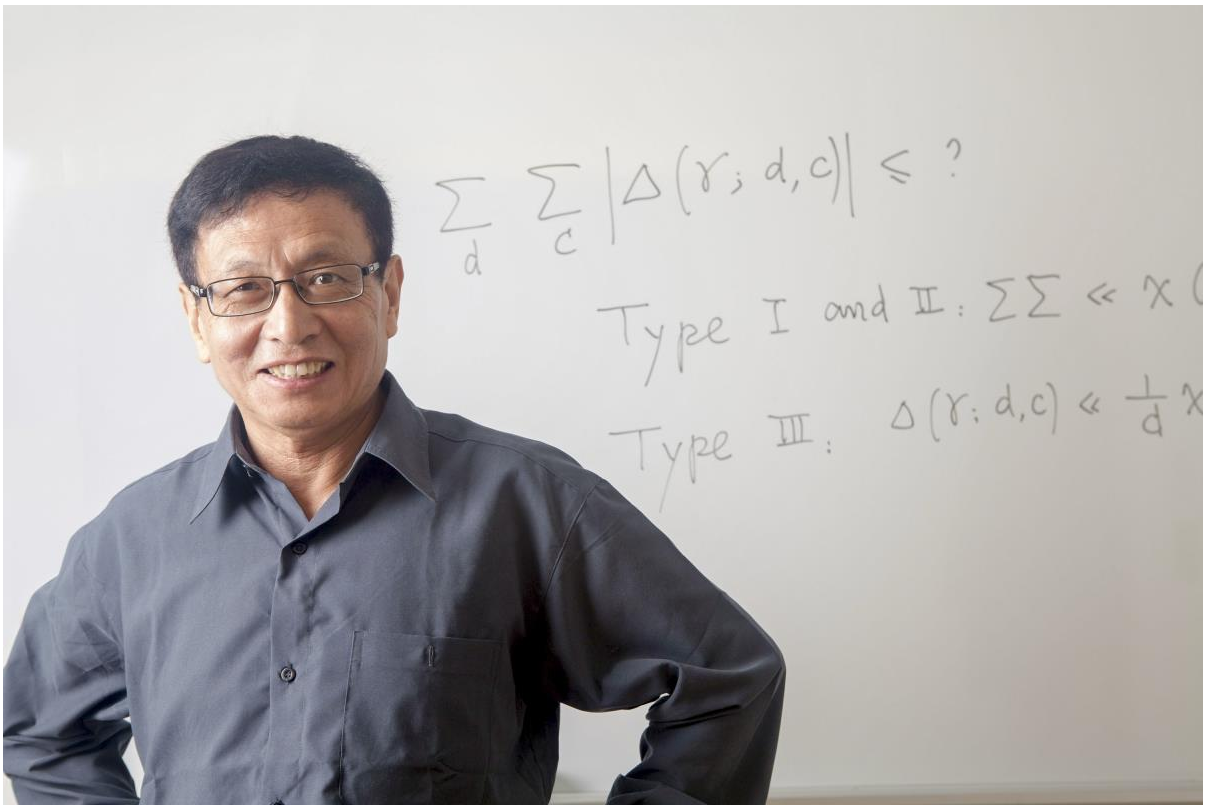
UNH math professor Yitang “Tom” Zhang has been named a 2014 MacArthur Fellow, the MacArthur Foundation announced yesterday. Zhang is one of 21 “exceptionally creative individuals with a track record of achievement and the potential for even more significant contributions in the future,” according to the foundation. Fellows receive a no-strings-attached stipend of $625,000 paid out over five years.

The so-called “genius grant” recognizes Zhang’s breakthrough proof related to one of mathematics’ oldest and most captivating problems, the twin prime conjecture. Often attributed to Euclid, the twin prime conjecture states that there are an infinite number of prime numbers (numbers divisible only by 1 and themselves) that are only two numbers apart, like 3 and 5 or 17 and 19. Zhang’s work, which has been described as proving a weak version of the twin prime conjecture, demonstrated that the number of prime pairs that are less than 70 million units apart is infinite.

“The limit of gap between these prime numbers is now bounded,” Zhang says. “I got to the number which is very large, 70 million.”

“He moved the goal post infinitely far, bringing something that had not been proved into the realm of fact,” adds Edward Hinson, chair of UNH’s department of mathematics and statistics. While Zhang’s finding has no obvious practical implications, it’s served as an academic springboard; mathematics colleagues across the globe have now narrowed the gap from Zhang’s 70 million to several hundred.

Zhang’s bounded gap proof, published in the journal Annals of Mathematics in May 2013 and heralded by colleagues as “astounding” and “one of the great results in the history of number theory,” immediately shot him from obscurity to mathematical celebrity. He’s traveled the globe, as invitations to speak and visit other universities have poured in, and Zhang spent the spring of 2014 as a member of the prestigious Institute for Advanced Study in Princeton, N.J.



He has collected some of math's most prominent prizes -- the Frank Nelson Cole Prize in Number Theory from the American Mathematical Society and Switzerland's Ostrowski Prize -- and next month he will be awarded the Rolf Shock Prize from the Royal Swedish Academy of Sciences.

And at the start of 2014, UNH promoted Zhang from lecturer, a fully benefited teaching position he held since 1999, to full professor.

A quiet man and popular teacher whose reticence and heavy Chinese accent cannot mask his humor, Zhang reflects on his newfound notoriety with mixed emotion. "Everything's getting better, although I wish to be very quiet, to be peaceful and not be bothered by all of this," he says. Quiet, he adds, is important to mathematical thought "and also to my personality."

Zhang arrived at his bounded gap proof after three fruitless years of thinking about the twin prime conjecture. He says the proof came to him while he was visiting a friend in Colorado on vacation. "I failed many, many times. But each time, I just thought, 'OK, this should be the beginning of a new process. Just keep going. Be confident in yourself,'" he says. "I try to show if you just really love math, love science, just keep going."

Zhang is UNH's third MacArthur Fellow. Poet Charles Simic, professor Emeritus of English, received the fellowship in 1984, and historian Laurel Thatcher Ulrich '80G was a professor of American history at UNH when she was named a MacArthur Fellow in 1992.

University of New Hampshire

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